places of some of the principal of these, which have been ascertained during the last fifteen years:—

No.	R.A.	Decl.	No.	R.A.	Decl.
1	213°	+ 53°	5	286°	+ 24°
2	227	− 1	6	293	+ 43
3	231	+ 17	7	296	± 0
4	272	+ 21	8	302	+ 23

The centre of emanation of the Lyrids is at 270° + 32½°, which lies between the constellations of Hercules and Lyra. It will be very interesting to secure additional observations this year as to the strength and character of this stream, and of the many lesser contemporary displays which manifest themselves at this period. Fortunately the weather is often propitious in the vernal season, and enables researches of this nature to be successfully prosecuted.

W. F. DENNING.

NOTES.

OUR readers may remember that, last autumn, *apropos* of a great patent case of colossal dimensions which was then before the Courts, we published an article urging that, in the interests of speedy justice, no less than for the dignity of science and its professors, it was most desirable that advantage should be taken of the provisions which already exist in our law, and especially in the Judicature Act of 1873 and its amending statutes, and in the rules of the Supreme Court framed under them, for the employment of scientific assessors or experts to aid the judge in strictly scientific cases. It may be remembered that, even in the very case on which we then commented, the tardy employment of Prof. Stokes to aid Mr. Justice Kay was productive of most satisfactory results. We are glad, therefore, to notice that, in a case of some difficulty which came before Lord Coleridge last week, the same eminent man was again called in, and again with the result of relieving the Court from the task of hearing a mass of expert evidence with which no judge and jury are competent to deal satisfactorily. The whole question at issue was whether a certain anemometer, of which one of the parties was patentee and the other the purchaser, came up to the description of its qualities given by the vendor. A considerable array of counsel appeared on both sides, and it was arranged that the services of Prof. Stokes should be called in to the aid of the Court. Seven of the anemometers were submitted to him, and, after an investigation by him, his report was read, and upon it judgment was given. The result is, that the report of the case occupies less than a third of a column of the *Times*. Without the services of Prof. Stokes, or some similar sworn expert, we should have had half-a-dozen or more expert witnesses on one side contradicted by half-a-dozen expert witnesses on the other side; a case which would have lasted three or four days before a wearied judge, conscientiously striving to understand purely technical details, and a perplexed and confused jury; great loss to both parties; an unsatisfactory result; and, as we think, no little scandal to science and scientific men. All this has been prevented by the very simple expedient of calling in an eminent man of science to make a sworn report on the purely technical details, and leaving the rest to the ordinary administration of our Courts. Herein, we are persuaded, lie the proper functions of scientific men in the administration of public justice.

TWO years ago the Dutch Congress of Science and Medicine was founded, and it was decided that it should meet every two years. The first meeting was held at Amsterdam in September 1887. The second meeting will take place at Leyden from the 25th to the 27th of April. The President of the Congress is Prof. Suringar (Leyden), who will deliver the opening address. A large attendance is expected.

THE meetings of the Institution of Naval Architects, last week, were in every way most successful, and the Institution is to be congratulated on the importance and the wide range of the subjects discussed. At the first meeting, on Wednesday, April 11, a remarkable paper on the designs for the new first-class battle-ships was read by Mr. W. H. White, the Director of Naval Construction. The principal object of this paper was to describe the main features of the approved designs for these battle-ships, and to contrast their protection, armament, speed, and coal-endurance with the corresponding features in other battle-ships designed during the last twenty years. Incidentally, Mr. White sought to show that there are good reasons why these ships surpass in size any previously constructed vessels of the Royal Navy. The reading of the paper was followed by a discussion, in which Sir E. J. Reed, Lord Charles Beresford, and others took part. On Thursday, Sir N. Barnaby, late Director of Naval Construction, read a paper on the protection of buoyancy and stability in ships. The next paper was by Captain Penrose Fitzgerald, on the protection of merchant steamers in time of war. The cruiser, *Piemonte*, built for the Italian Government, at Elswick, was described by Mr. P. Watts, of Elswick, her designer; and Mr. J. I. Thorneycroft read a paper on water-tube boilers for war-ships. On Thursday evening, technical papers were read by Mr. John Scott, Mr. J. Macfarlane Gray, and Mr. V. B. Lewes. On Friday, the first paper read was by Mr. Beauchamp Tower, describing an apparatus for providing a steady platform for quick-firing or machine-guns, or a telescope, or a search-light, on board ships at sea. The second paper was by Prof. V. B. Lewes, on the corrosion and fouling of steel and iron ships. Two papers by Mr. R. E. Froude followed, one on the part played in the operations of propulsion by differences in fluid pressure, and the other on Prof. Greenhill's theory of the screw propeller. Technical papers were likewise read by Mr. W. Rundell and Mr. A. F. Hill.

THE general meeting of the Institution of Mechanical Engineers will be held on Wednesday evening, May 1, Thursday evening, May 2, and Friday afternoon, May 3, at 25 Great George Street, Wastminster, by permission of the Council of the Institution of Civil Engineers. The chair will be taken by the President, Mr. Charles Cochrane, at half-past seven p.m., on Wednesday and Thursday evenings, and at half-past two p.m. on Friday afternoon. He will deliver his inaugural address on Wednesday evening. The following papers will be read and discussed as far as time permits:—"Research Committee on Marine-Engine Trials: Report upon Trials of the s.s. *Meteor*," by Prof. Alexander B. W. Kennedy, F.R.S., Chairman; and "Description of an Apparatus for Drying in Vacuum," by Mr. Emil Passburg, of Breslau (Friday afternoon). The anniversary dinner will take place on Friday evening, May 3.

THE public funeral of M. Chevreul, which took place in Paris, on Saturday last, was one of great splendour. This was due in part, no doubt, to the interest excited by M. Chevreul's extraordinary age; but it must also be taken as a striking indication of the respect felt in France for men who achieve eminence in science. In front of the house in which M. Chevreul died, beside the Jardin des Plantes, a tent was fitted up as a chapel; and here the body was placed in state. The procession to the Cathedral of Notre Dame was headed by a detachment of police, who were followed by a platoon of cuirassiers, the 103rd Infantry Regiment, with flags, and a band of ushers, carrying wreaths presented by the Stearine-makers of France, the Stearine-makers of Lyons, the Friendly Society of Natives of Anjou, living in Paris, and a large number of other public and private bodies. Last of all came a wreath sent by the Gobelin Works, surrounded by a woollen fringe dyed by M. Chevreul himself. The pall-bearers were MM. Fallières, Minister of Public Instruction, Louis Passy, President of the Society of Agriculture, Chaumeton, President of the Students' Association, Des Cloizeaux, of the Academy of Sciences, Quatrefages, of the Academy of Sciences, Chautemps, President of the Municipal Council of Paris, and Roy, Manager of the Society of Arts and Manufactures. Next came the members of M. Chevreul's family, grandchildren and great-grandchildren; and they were followed by the representatives of the President of the Republic, by several of the Ministers, the Presidents of the Senate and the Chamber, and representatives of all the great educational and scientific bodies and administrative departments. At Notre Dame there was an impressive religious service. The interior of the church was hung with black, and over the porch, which was also hung with black, was a scroll bearing the dates "1786-1889." In the centre of the choir was a catafalque resting on silver columns, and surmounted by a canopy with bands of ermine. After the religious ceremony, the body was removed to L'Hay, and interred in the family vault. In compliance with M. Chevreul's last wishes, no speech was made over his grave.

MR. FRANCIS ARTHUR HERON, B.A., of New College, Oxford, has been appointed, after competitive examination, to the Assistantship in the Geological Department of the British Museum, vacant by the resignation of Mr. Arthur Dendy, now Demonstrator of Biology in the University of Melbourne.

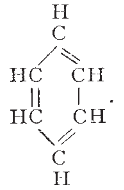
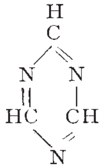
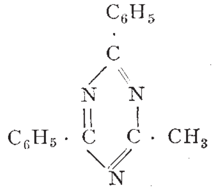
WE are glad to see that female art students have now the opportunity of studying the scientific basis of their profession, as Bedford College for Ladies has instituted a well-arranged course of lectures to be given this spring by the Professor of Physics, Mr. Wornack, on light and colour. That an artist should have, at least, an elementary knowledge of the physics of light and colour there can be no doubt.

THE Liverpool Marine Biology Committee have arranged to have a four days' dredging expedition at Easter in the Liverpool Salvage Association's steamer *Hyæna*. The ground expected to be covered on this cruise is from the south end of the Isle of Man southwards to Anglesey, and along the north coast of Anglesey to Puffin Island. The submarine electric light will again be used as an attraction in tow-nets let down to the bottom, and this method of capturing some of the more active Crustacea which appear to escape the dredge, will be tried in considerably deeper water than in last year's *Hyæna* Expedition. Mr. Hoyle's new tow-net, which can be opened and closed at any required depth, and Mr. W. S. McMillan's large bottom net, will also be used.

THE extraordinary meeting of the Société Géologique de France, which will be held this year in Paris, beginning on August 18, promises to be one of great interest. During the week devoted to the meeting, the collections in Paris will be visited, and there will be a series of excursions to places of interest within easy reach of that city. In the week following the meeting, excursions will be made to more distant localities—among others to the Auvergne and Brittany, that to the former district under the guidance of M. Michel-Lévy, and that to Brittany conducted by M. C. Barrois. Arrangements will be made with the railway authorities for a reduction of 50 per cent. upon the fares; but in order to secure this advantage the names of persons intending to attend must be sent to the secretaries of the Society before July 1. British geologists, and especially Fellows of the Geological Society of London, are cordially invited to be present.

THE April number of *Himmel und Erde*, the magazine of the Gesellschaft Urania (Berlin), contains an interesting article on the Norwegian North Sea Expedition, by Prof. Mohn, Director of the Norwegian Meteorological Institute, Christiania. There is also a good article on the famous hot springs of the Yellowstone Park, by Prof. Zittel, which is illustrated by a map of the neighbourhood and a beautiful photogravure of the terraces. The Copernican theory is discoursed upon by Dr. William Meyer, and two drawings comparing the supposed paths of Mars on the old and new theories very forcibly illustrate its beauty and simplicity. Dr. Ernst Wagner contributes an article on the eruption of Krakatão, particularly referring to the work of the Krakatão Committee of the Royal Society. Besides these, there are also particulars of the various astronomical phenomena for the month.

PROF. KIKUCHI, of Tokio, Japan, has completed his work (in Japanese) entitled "Elements of Plane Geometry" by a second volume, which contains "Book iv., Ratio and Proportion; Book v., Geometrical Applications."

A SERIES of derivatives of the unknown tri-hydrocyanic acid, $H_3C_3N_3$, have been prepared by Prof. Krafft and Dr. von Hansen, of Heidelberg. Tri-cyanogen chloride, $C_3N_3Cl_3$, and the corresponding bromide have long been known, and the radicle C_3N_3 is supposed to exist in the ferro- and ferri-cyanides. Hence it has been expected that some day the hydride itself would be obtained, and although this has not yet been accomplished, a very close approach has been effected by the Heidelberg chemists, who have succeeded in preparing derivatives containing organic radicles instead of hydrogen. Tri-cyanogen hydride may be regarded as bearing the same relation to prussic acid as benzene does to acetylene. On passing a current of acetylene gas through a considerable length of platinum tubing heated to redness, condensation occurs, and benzene, together with other heavier hydrocarbons, is produced; three molecules of acetylene, C_2H_2, become locked up together in the closed chain of C_6H_6,  . In the same way three molecules of prussic acid, HCN, may be supposed to condense into the closed chain of $H_3C_3N_3$,  . The first compound of the new series is methyl-diphenyl tri-cyanide, 

Two parts of aluminium chloride, Al_2Cl_6, were added to a mixture of five parts of benzonitrile, C_6H_5 . CN, and two parts of acetyl chloride, CH_3 COCl, keeping the temperature down to 0° C. The mixture was warmed upon a water-bath, when the aluminium chloride gradually passed into solution, and hydrochloric acid gas was copiously evolved. The yellow liquid thus obtained was poured into iced water, upon which a yellowish waxy substance separated endowed with a powerful tear-producing odour. The dried wax was next dissolved in ether, and after filtration of the solution and subsequent evaporation of the ether, was subjected to fractional distillation under reduced pressure. A quantity of benzonitrile passed over first; then benzoic acid, and finally, at a pressure of 15 millimetres and temperature of 220°-230°, corresponding to 370° under ordinary pressure, methyl diphenyl tricyanide, which solidified in the receiver to a white mass of crystals. By recrystallization from alcohol, it was obtained in long needles. About 50 grammes were obtained for every 100 grammes of acetyl chloride used. The crystals melted at 110°. When hydrochloric acid gas was passed through a solution of the needles in benzene, crystals of the hydrochloride separated. Upon similarly treating a warm alcoholic solution, and adding a warm solution of platinum chloride in alcohol, ruby-red crystals of the platinochloride were obtained on cooling, analyses of which confirmed the above formula, which had been independently established empirically by analyses of the base itself. A vapour-density at 444° also pointed to the corresponding molecular weight. The proof of its constitution was afforded by the products of saponification, which were found to be simply acetic and benzoic acids and ammonia. When propionyl chloride was substituted for acetyl chloride, the corresponding ethyl compound was obtained, and likewise the propyl compound by use of normal butyryl chloride.

SEVERE oscillations of the ground were noticed at Athens during the evening of April 3.

IN the *Meteorologische Zeitschrift* for March, Dr. J. Hann summarizes the results of the meteorological observations made during the French International Polar Expedition to Cape Horn in 1882-83. These observations are specially interesting, both on account of the locality and of their fulness, as they embrace several subjects not generally included in the other expeditions. The principal features of the climate are a relatively mild temperature, a high degree of humidity, precipitation in the form of rain, snow, and hail at all seasons, an almost continually cloudy sky, and sudden and very violent storms, especially in summer-time. Storms occur in summer every four or five days, and decrease in number and intensity as winter advances. Nine times out of ten they approach from between north-west and south-south-west. Storms from the north-east are very rare. Thunderstorms rarely occur; distant thunder was only heard five times during summer, and lightning was seen only twice. No observations were made at Orange Bay during the month of September, but Dr. Hann has interpolated values from observations taken at Ushuaia, about a degree further northward.

THE New England Meteorological Society, following the custom of the Royal Meteorological Society of London, held an Exhibition of Instruments at Boston, in January last. Among the more interesting articles exhibited we may mention: (1) A registering actinometer, by Richard Brothers, of Paris, consisting of a bright and black globe, each containing a thermometer which registers on a drum. (2) A Watkin aneroid for mountain use, in which the hand travels three times round the dial in registering from 23 to 31 inches, so that the open scale is not sacrificed to the size of the instrument. (3) A portable anemometer, as designed by Mr. F. Galton for the Meteorological Office. In it, the Robinson cups are geared to a dial, but can be disconnected by inverting a sand-glass after a run of two minutes, and the wind's velocity in miles per hour can be read off at leisure. (4) A form of the Jordan sunshine-recorder, modified by Prof. Pickering. It consists of two half-cylinders, each with its axis parallel to the earth's axis. The sun shines through holes, the latter being shifted slightly each day, so that one sheet of sensitized paper lasts a week. (5) The Chief Signal Office exhibited a very delicate anemometer, with conical cups made of aluminium, used to determine the constants of the anemometers of the service. Among the curiosities of the Exhibition were a bottle and a saucer fused together by lightning, and a piece of window-glass which had been ground translucent by the sand-bearing winds of Cape Cod.

MR. C. CARUS-WILSON writes to us that he has devised a simple and effective dry method by which the denser minerals—zircon, rutile, tourmaline, &c.—may be separated from sand. A piece of cardboard about 2 feet long is bent in the form of a shoot or trough (it must not be allowed to break), and held in this form by elastic bands at either end; this must then be held, or fixed, at an angle sufficiently inclined to allow the sand to travel slowly down the shoot on being gently tapped. A small quantity of the sand to be treated is now placed at the head of the trough, which is then tapped with the finger. When the trough is tapped, the sand travels slowly down, and in doing so, the denser grains lag behind, forming a dark mass in the rear of the stream; this dark mass increases as the sand flows on, and must be collected and placed in a receptacle just the moment before the last tap would cause it to fall off the trough. When a sufficient quantity of this denser sand has been thus collected, it should be placed in the lid of a cardboard box (about 12 inches by 6), and gently shaken to and fro at a slightly inclined angle, the mass being at the same time gently blown upon with the breath. The finer quartz grains will thus be blown away, and hardly any but the denser grains will remain.

AT a recent meeting of the Northern Antiquarian Society of Copenhagen, Dr. L. Zinck drew attention to the remarkable graves from the Stone Age found in the northern part of Seeland. In one grave 52 bodies were found, and upwards of 175 ornaments. From the number of graves in one locality he came to the conclusion that the occupants had dwelt there. Certain bone implements showed that they had reared sheep, whilst their cooking-pots were exactly like those now in use by the peasants, called "Jutland" pots.

DURING last year the archæological researches that have been carried out in Norway were extended as far north as 70° 15′ lat. N. The results appear to show that the islands and the coast were well populated in prehistoric times, but that the cultivation of the soil did not begin until a late date. Numerous burial-places were found, and among the weapons and implements discovered were schist arrow-heads, knives of three kinds, and chisels. No stone axes like those found in the south were discovered. From the fact that no bronze objects have ever been found in the north of Norway, it is concluded that the inhabitants of the Stone Age, on coming in contact with those of the early Iron Age, adopted the use of iron, and never learnt the use of bronze. It is worthy of note that all the implements from the Stone Age are of schist, none being of flint, as in the south.

ATTENTION has lately been called by an American physician (Dr. Lindsey) to the therapeutic value of regions below the sea level, for asthmatical or consumptive patients, who there have continuously higher atmospheric pressure than at the sea-level. Excellent effects have been thus obtained in the valley of Conchilla, near Los Angeles in California, about 273 feet under the sea (barometric pressure only about 7 mm. higher). The most noteworthy place of the kind on the earth's surface is probably the Dead Sea district (−1289 feet), and the following are some others: Lake Asal in East Africa (−639 feet), the oasis of Araj in the desert of Lybia (−270 feet), the Arroyo del Muerto in California (−230 feet), the oasis of Siwah in Lybia (−123 feet), the borders of the Caspian (−86 feet).

IN the Report of the Acting Administrator of British Bechuanaland for the past year, presented to the Houses of Parliament, it is said that the forests of that region are of considerable extent, but they are being rapidly destroyed for the timber and firewood required at Kimberley. Both natives and Europeans are engaged in denuding one of the finest forest tracts in the world, which might be protected by a small yearly expenditure. The system at present employed is that any person on payment of a small fee is allowed to cut down timber without any check being put upon him. The Surveyor-General suggests that a ranger be employed by the Crown to sell, on behalf of the Crown, fuel and timber that has reached maturity. With regard to the trigonometrical survey of the country, the piles built extend over 4000 square miles, and the final results deduced from observations made over 2600 square miles have been recorded. It was intended to commence a geological survey during the past year, with the object chiefly of examining the districts in which gold, coal, lead, and other minerals have been found, but considerations of economy have led to the abandonment of this scheme for the present.

THE present state and the history of the flora of the province of St. Petersburg were lately the subjects of a very interesting communication by Dr. R. Regel at a meeting of the St. Petersburg Society of Naturalists (*Mémoires*, vol. xix.). The influence of man in the introduction of new species is most marked in so populous a province. Several species have been unconsciously imported by man from South-Eastern Europe, the Mediterranean coast, and Asia; and many garden plants, such as *Bellis perennis*, *Impatiens parviflora*, and *Aster præcox*, have become regular members of the wild-growing flora. Some of them have spread with astonishing rapidity. The recently imported *Erigeron canadense* has now penetrated as far as the Altai Mountains; the *Matricaria discoidea*, imported from America thirty years ago, is found all over the region; while the *Sambucus racemosa* grows even in the wildest marshes of Schlusselburg. Plants imported by man are dispersed by birds, water, and wind over a wide space, and a great many species, such as *Elodea canadensis*, *Corydalis bracteata*, *Scilla cernua*, &c., have spread during the last ten years. Dr. Regel insists upon the necessity of such species being carefully mentioned, because a few years after their introduction the botanist may not be able to explain how they appeared in the region, and may suppose that they have been merely overlooked.

ANOTHER interesting feature of the St. Petersburg flora which has been pointed out by Dr. Regel, is the frequency of white colour in the case of such flowers as are coloured pink or blue in Central Europe. The prevalence of white in the north is thus confirmed. The *Polygala vulgaris*, *Lychnis viscaria*, *L. Flos-cuculi*, *Centaurea phrygia*, *Jasione montana*, *Campanula glomerata*, *C. Trachelium*, *C. latifolia*, *C. rotundifolia*, *C. patula*, *Calluna vulgaris*, *Arctostaphylos Uva-ursi*, *Thymus serpyllum*, *Brunella vulgaris*, *Gymnadenia conopsea*, *Orchis maculata*, *O. Traunsteineri*, and others were found with white flowers. In accordance with Dr. Masters's views, Dr. Regel sees in this fact a pathological phenomenon due to unfavourable climatic conditions. The colouring pigment does not disappear, but more intercellular spaces appear, and being filled with air, they permit the full reflection of light. In fact, several white flowers of *Campanula patula* became blue when dried, the pressure exerted upon them evidently having compressed and reduced the intercellular spaces.

THE following are the lecture arrangements at the Royal Institution after Easter, so far as they relate to science:—Prof. E. Ray Lankester, four lectures on some recent biological discoveries; Mr. Eadweard Muybridge, of Pennsylvania, two lectures on the science of animal locomotion in its relation to design in art (illustrated by the zoopraxiscope); Prof. Dewar, five experimental lectures on chemical affinity; Prof. W. Knight, of St. Andrews, three lectures on (1) the classification of the sciences, historical and critical; (2) idealism and experience, in philosophy and literature; (3) idealism and experience, in art and life (the Tyndall lectures). The Friday evening meetings will be resumed on May 3, when a discourse will be given by Sir Henry Roscoe, M.P., on aluminium; succeeding discourses will probably be given by Prof. Dewar, Prof. Silvanus P. Thompson, the Rev. S. J. Perry, Prof. D. Mendeleef, Mr. A. Geikie, Mr. C. V. Boys, and other gentlemen.

THE Registrar of the University of London desires us to call attention to the fact that the June examination for matriculation is, in the present and future years, to be held a week earlier than heretofore.

IN the list of English and American Corresponding Members of the French Academy of Sciences, printed in NATURE, January 24 (p. 312), Prof. A. Agassiz was inadvertently omitted from the list of names under "Anatomy and Zoology."

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus*) from Barbadoes, presented by the West Indian Natural History Exploration Committee; a Kinkajou (*Cercoleptes caudivolvulus*) from Demerara, presented by Mrs. Marian FitzSimons; a Grey Squirrel (*Sciurus griseus*) from North America, presented by Miss Vokes; a Shag (*Phalacrocorax gracilis*), British, presented by Mr. Henry Reynold's; a Black Tortoise (*Testudo carbonaria*) from Trinidad, a —— Cayman (*Jacare*, sp. inc.) from Demerara, presented by Colonel Fielden, F.Z.S.

OUR ASTRONOMICAL COLUMN.

MELBOURNE OBSERVATORY.—The twenty-third Annual Report of the Board of Visitors to this Observatory, together with the Annual Report of the Government Astronomer, have just reached us. The visitation took place on October 4, 1888, and the Astronomer's Report is for the year ending June 30, 1888. The principal points of interest in the Reports are those referring to the great reflector and to the new photographic telescope. The mirrors of the former instrument had become so dull that their repolishing was rendered imperative, and the work was to be done at the Observatory itself, the risk and cost of sending them to England being prohibitory. With a view to this important operation, a number of small mirrors have been repolished, in order that the necessary experience might be acquired before the great mirrors were taken in hand. The new telescope for the photographic survey was well advanced, and Mr. Ellery expected that Melbourne would be ready to enter on her share of the work as soon, if not sooner, than the other associated Observatories. The Government of Victoria, besides supplying the necessary funds to enable the Observatory to take part in the photographic survey, had granted £2300 for the erection of a dwelling-house for the Director within the Observatory grounds. The new transit-circle and the two equatorials had been in constant use, and were in good order; 2962 observations of right ascension, and 1434 of Polar distance, having been obtained with the former during the year. The photoheliograph had been subjected to a slight alteration, the front lens of the secondary magnifier having been previously too close to the primary focus, so that much trouble was caused from the magnified images of any particles of dust which might lodge upon it. The sun-pictures had, in consequence of the time employed over this alteration, not been so numerous as usual, a record of the sun's surface being only obtained on 129 days. With the great telescope, eighty-one nebulæ were observed or searched for.

Mr. Ellery reports that the meteorological department, especially with regard to the Inter-Colonial Weather Service, increases in importance and efficiency every year, and that he proposed to call a conference of the several Meteorological Directors of the Australian Colonies, with the view of assimilating their methods of reporting, and of still further improving meteorological work in Australia.

COMET 1889 *b* (BARNARD, MARCH 31).—Herr von Hepperger has computed the following elements and ephemeris for this object from observations of dates March 31, April 4 and 8:—

$$T = 1889 \text{ July } 27{\cdot}4812 \text{ Berlin M.T.}$$

$$\left.\begin{aligned} \omega &= 257^\circ\ 27'\ 28'' \\ \Omega &= 308\ \ 29\ \ 41 \\ \iota &= 162\ \ 46\ \ 20 \end{aligned}\right\} \text{Mean Eq. } 1889{\cdot}0.$$

$$\log q = 0{\cdot}29519$$

Error of middle place (O -- C.).

$\Delta\lambda \cos\beta = -11''$. $\Delta\beta = 0''$.